SD28111-01

SHEET INDEX

CONTENTS	SHEET NO.	ISSUE NO.																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
SHEET INDEX SUPPORTING INFORMATION	A1	1	2	3	4	5	6																			
APPARATUS INDEX LEAD INDEX OPTION INDEX	A2						6																			
FS1 INTERFACE CIRCUIT	B1A*	1	2	3	4	5	6																			
FS2 ALARM AND MAKE BUSY	B1B						6																			
FS3 DISTRIBUTE AND SCAN POINT ASSIGNMENTS	B2	1	2	2	4	4	4																			
APP FIG.1	C1	1	2	3	3	3	6																			
CIRCUIT NOTES EQUIPMENT NOTES	D1	1	2	2	4	5	6																			
INFORMATION NOTES CROSS CONNECTING INFORMATION	D2	1	2	2	2	5	6																			
SC 1 INITIALIZATION SC 2 TYPICAL MDT USAGE	E1						6																			
CIRCUIT REQUIREMENT TABLE	F1	1	1	3	3	3	3																			

CONTENTS	SHEET NO.	ISSUE NO.																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
CAD 1	G1	1	1	1	1	1	1																			
CAD 2,3	G2	1	2	2	2	2	2																			
CAD 4,5	G3	1	2	2	2	2	2																			
CAD 6	G4	1	2	3	4	5	6																			
CAD 7	G5				4	4	4																			
BD 1 BLOCK DIAGRAM	H1	1	1	1	1	1	6																			

*SHEETS WITH SUFFIX LETTER A WERE FORMERLY WITHOUT A SUFFIX LETTER.

DWG ISSUE	CD ISSUE	DATE ISSUED	DRAWN	APPD
1	1	8-8-75	CDI DP	JT RBC THJ
2B	1 APP 1B	3-29-76	CDI LR	JT RBC THJ
3A	1 APP 2A	3-29-76	CDI LR	JT RBC THJ
4AR	2AR	4-18-77	CDI PEC	JT ABVL RCA
5B	2AR APP 1B	4-18-77	CDI PEC	JT ABVL RCA
6A	2AR APP 4	11-15-77	CDI CDI	JT ABVL RCA

SHEET INDEX NOTES

1. WHEN CHANGES ARE MADE IN THIS DRAWING, ONLY THOSE SHEETS AFFECTED WILL BE REISSUED.
2. THIS SHEET INDEX WILL BE REISSUED AND BROUGHT UP TO DATE EACH TIME ANY SHEET OF THE DRAWING IS REISSUED, OR A NEW SHEET IS ADDED.
3. THE ISSUE NUMBER ASSIGNED TO A CHANGED OR NEW SHEET WILL BE THE SAME ISSUE NUMBER AS THAT OF THE SHEET INDEX.
4. SHEETS THAT ARE NOT CHANGED WILL RETAIN THEIR EXISTING ISSUE NUMBER.
5. THE LAST ISSUE NUMBER OF THE SHEET INDEX IS RECOGNIZED AS THE LATEST ISSUE NUMBER OF THE DRAWING AS A WHOLE.

SUPPORTING INFORMATION

CATEGORY	NO.
EQUIPMENT DRAWINGS	J23252CR ED-94957-10
EQUIPMENT DESIG REQT	J23252
MAINTENANCE BSP	

NOTICE- NOT FOR USE OR DISCLOSURE OUTSIDE THE BELL SYSTEM EXCEPT UNDER WRITTEN AGREEMENT.

ISSUE
6A

1C02

CROSSBAR SYSTEMS
NO.5

MAINTENANCE DATA
TRANSMITTER CIRCUIT

②

AT&TCO
STANDARD

SD-28111-01-A1
16 SHEETS

BELL TELEPHONE LABORATORIES
INCORPORATED

DWG SIZE
6S

PRINTED IN U.S.A.

APPARATUS INDEX

DESIG	LOCATION FS	LOCATION APP FIG.	LOCATION EQPT
RELAYS			
ACO	1B/G3	1	
CMJ	1B/E1	1	
CMN	1B/E1	1	
LMJ	1B/F3	1	
LMJA	1B/H2	1	
MB	1B/B2	1	
MB1	1B/C2	1	
STR	1A/C4	1	
COMPONENT ASSEMBLIES			
CAO	SEE APP FIG.	1	
DIODES			
MB1	1B/C1	1	
KEYS			
ACO	1B/G4	1	
AR	1B/H1	1	
LAMPS			
ALM	1B/F3	1	
MB	1B/C1	1	
RAL	1B/G3	1	
NETWORKS			
STRA	1A/D4	1	
TRC	1A/F3	1	
RESISTORS			
CAL	1B/F5	1	
LAL	1B/G5	1	

LEAD INDEX

DESIG	LOCATION FS	LOCATION CAD
ALARM SENDING CKT		
LK	1B/H0	4C7
COMBINED SCANNER AND SIGNAL DISTRIBUTOR MATRIX CKT		
RSTB1	1B/G0	4B7
RSTO	1B/G0	4B7
TBLAA	1B/G0	4B7
TBLAB	1B/G0	4B7
DISTRIBUTOR & SCANNER CKT		
SOD-8D	1A/F4	
SOG-8G	1A/G4	
STR	1A/C4	
STRA	1A/E4	
STRAD	1A/D4	
STRAG	1A/D4	
STRD	1A/C4	
STRG	1A/C4	
TRC	1A/F4	
TRCD	1A/F4	
TRCG	1A/F4	
INTERFACE AND CONTROL CKT		
BAT	1B/G7	4E5
LK	1B/H0	4C7
INTERFACE CKT FOR PROGRAM CONTROLLED DATA ACQUISITION		
SO-8	1A/E2	4A0
STM	1A/E2	4C2
STRM	1A/B3	4C2
MASTER TEST FRAME JACK, LAMP AND KEY CKT		
AAC	1A/H2	4B2
ACO	1B/B0	4G0
MB	1B/B0	4B2
MBL	1B/C0	4G0
NO. 5 OFFICE ALARM CKT		
MJ	1B/F7,G7	
MN	1B/F7	
TROUBLE RECORDER CKT		
ONL	1B/E3	4E0
ROS	1B/E3	4F0
ROS1	1B/E3	4E0
SO-8		4C0
TROUBLE RECORDER CONTROL CKT		
STR		4F0
STR1		4D0
STRA		4F0
STRA1		4D0
TROUBLE RECORDER CONTROL AND TEST CKT		
BW00,01		1D7
BW02,03		1D5
BW04,05		1D2
BW06,07		1D0
BW08,09		1D7
BW10,11		1D5
BW12,13		1D2
BW14,15		1D0
BW16,17		1D7
BW18,19		1D5
BW20,21		1D2
BW22,23		1D0
BW24,25		1D7
BW26,27		1D5
BW28,29		1D2
BW30,31		1D7
BW32,33		1D5
BW34,35		1D2
BW36,37		1D0
BW38,39		1D7
BW40,41		1D5
BW42,43		1D2
BW44,45		1D0
BW46,47		1D7
BW48,49		1D5
BW50,51		1D2
BW52,53		1D0
BW54,55		1D7
BW56,57		1D5
BW58,59		1D2
BW60,61		1D0
BW62,63		1D7
BW64,65		1D5
BW66,67		1D2
BW68,69		1D0
BW70,71		1D7
BW72,73		1D5
BW74,75		1D2
BW76,77		1D0
BW78,79		1D7
BW80,81		1D5
BW82,83		1D2
BW84,85		1D0
BW86,87		1D7
BW88,89		1D5
BW90,91		1D0
BW92,93		1D7
BW94,95		1D5
BW96,97		1D2
BW98,99		1D0
BW100,101		1D7
BW102,103		1D5
BW104,105		1D2
BW106,107		1D0
BW108,109		1D7
BW110,111		1D5
BW112,113		1D2
BW114,115		1D0
BW116,117		1D7
BW118,119		1D5
BWX0,1		1D0
BWX2,3		1D2
ONL	1B/B3	4E0
ROS	1B/B3	4F0
ROS1	1B/D3	4E0
SO-8	1A/F2	4C0
STR	1A/C2	4F0
STR1	1A/C2	4D0
STRA	1A/D2	4F0
STRA1	1A/D2	4D0
TRC	1A/F2	4C0
TRMB	1B/C3	4F0

OPTION INDEX

APP OR WRG	RATED ON ISSUE	REF NOTES	LOCATION
Z	STD 5B	102, 110	1B/G6,H1
Y	STD 5B	102, 110	1B/G5,H1
X	STD 5B	102, 110	1B/G5,H1
W	STD 2B	102, 107	1A/C4,D4,F2
V	STD 2B	102, 107	1A/C3,D4,F2
T	MD 2B	108	1B/G1,G2
S	STD 2B	108	1B/G1
R	STD 5B	102, 111	1B/G5

MAINTENANCE DATA TRANSMITTER		DWG SIZE 6S	ISSUE 6A
BELL LABORATORIES	SD-28111-01-		A2

E-7020-216-79I
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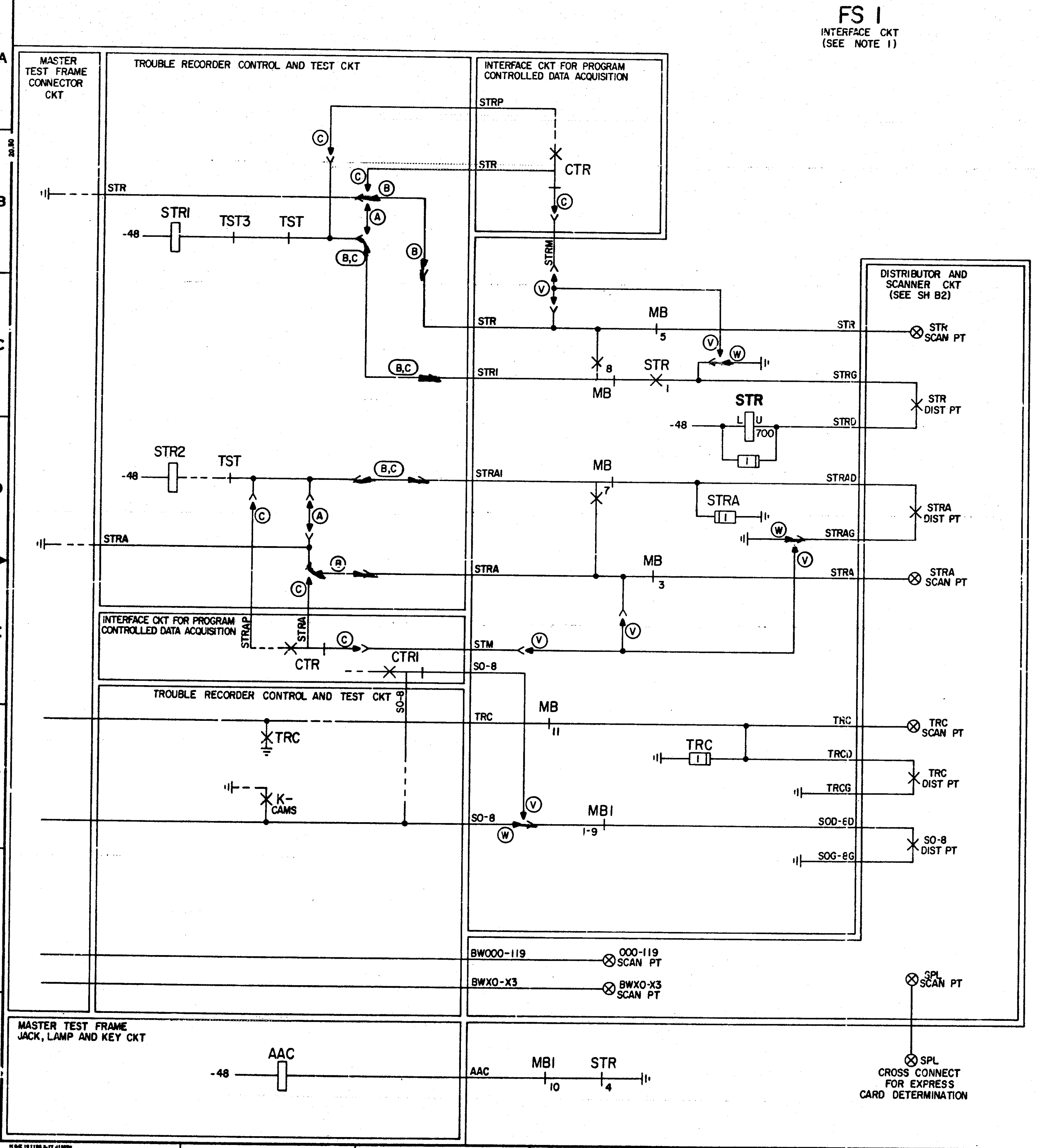

NOTES:
1. OPTION A - NEITHER MDT CKT NOR INTERFACE FOR DATA ACQUISITION CKT PROVIDED

OPTION B - MDT CKT ONLY PROVIDED

OPTION C - INTERFACE CKT OR BOTH INTERFACE CKT AND MDT CKT PROVIDED

MAINTENANCE DATA
TRANSMITTER

MAINTENANCE DATA TRANSMITTER	DWG SIZE 6S	ISSUE 6A
BELL LABORATORIES	SD-28111-01-	B1A

E-7421 (8-75)
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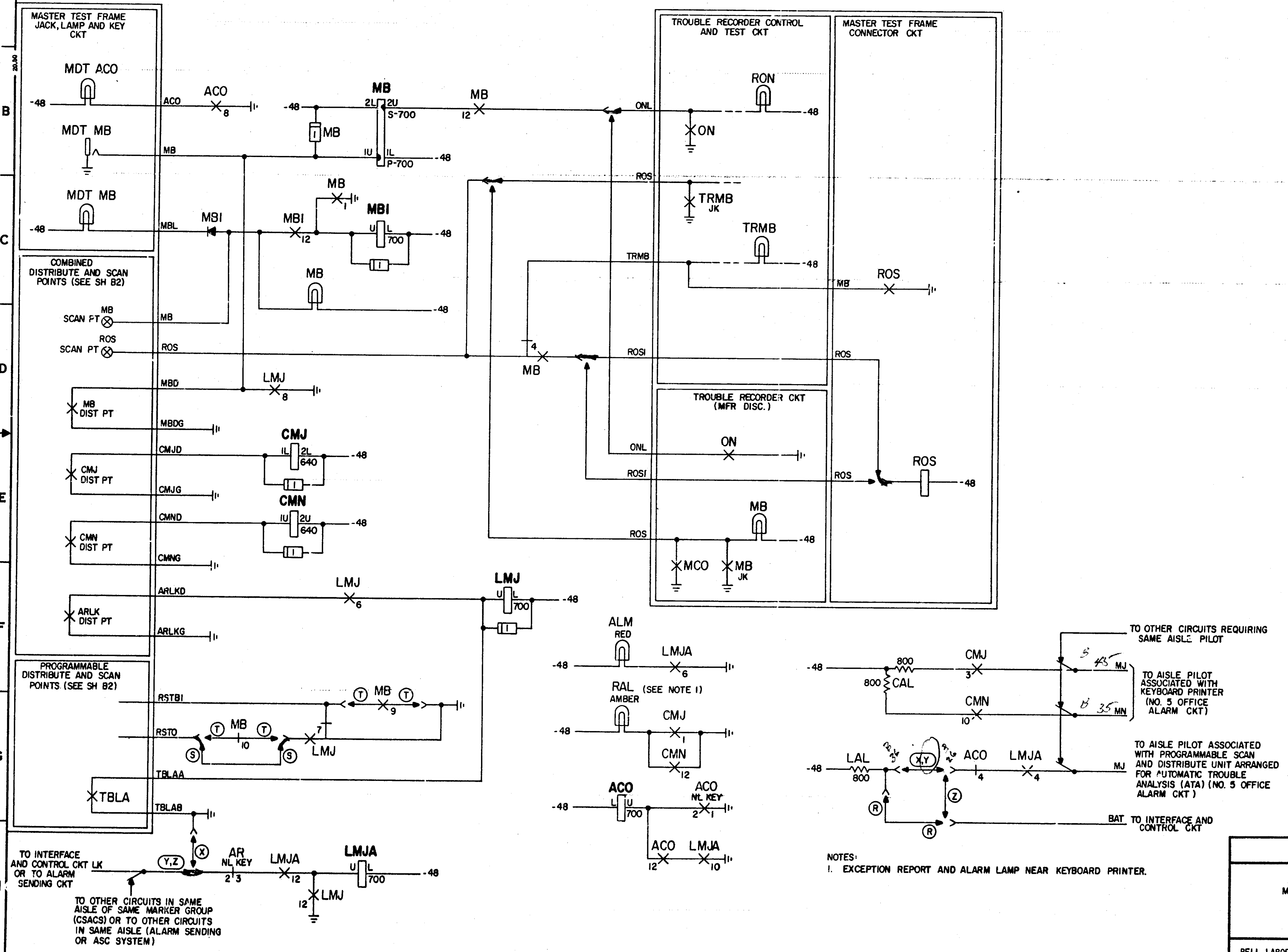
FS 2

ALARM AND MAKE BUSY


MASTER TEST FRAME JACK, LAMP AND KEY CKT
MDT ACO
MDT MB
MDT MB
-48
ACO
ACO 8
MB
MBL
MBI
MBI 12
MB 2L 2U S-700
1U 1L P-700
MB
MB 12
MB 1
MBI U L 700
MB
COMBINED DISTRIBUTE AND SCAN POINTS (SEE SH B2)
MB SCAN PT
ROS SCAN PT
ROS
MBD
LMJ 8
MB DIST PT
MBDG
CMJD
CMJ 1L 2L 640
CMJ DIST PT
CMJG
CMND
CMN 1U 2U 640
CMN DIST PT
CMNG
ARLKD
LMJ 6
LMJ U L 700
ARLK DIST PT
ARLKG
PROGRAMMABLE DISTRIBUTE AND SCAN POINTS (SEE SH B2)
RSTBI
T MB 9 T
RSTO
T MB 10 T
S S
7 LMJ
TBLAA
TBLA
TBLAB
X
TO INTERFACE AND CONTROL CKT LK OR TO ALARM SENDING CKT
Y,Z
AR NL KEY 2 3
LMJA 12
LMJA U L 700
12 LMJ
TO OTHER CIRCUITS IN SAME AISLE OF SAME MARKER GROUP (CSACS) OR TO OTHER CIRCUITS IN SAME AISLE (ALARM SENDING OR ASC SYSTEM)
4 MB
MB
TROUBLE RECORDER CONTROL AND TEST CKT
ONL
RON
ON
ROS
TRMB JK
TRMB
TRMB
ROSI
MASTER TEST FRAME CONNECTOR CKT
MB
ROS
ROS
TROUBLE RECORDER CKT (MFR DISC.)
ONL
ON
ROSI
ROS
ROS
MB
MCO
MB JK
ALM RED
LMJA 6
RAL (SEE NOTE 1) AMBER
CMJ 1
CMN 12
ACO L U 700
ACO NL KEY 2 1
ACO 12
LMJA 10
800
CAL 800
CMJ 3
CMN 10
TO OTHER CIRCUITS REQUIRING SAME AISLE PILOT
3 43 MJ
B 35 MN
TO AISLE PILOT ASSOCIATED WITH KEYBOARD PRINTER (NO. 5 OFFICE ALARM CKT)
LAL 800
X,Y
ACO 4
LMJA 4
MJ
R
Z
R
TO AISLE PILOT ASSOCIATED WITH PROGRAMMABLE SCAN AND DISTRIBUTE UNIT ARRANGED FOR AUTOMATIC TROUBLE ANALYSIS (ATA) (NO. 5 OFFICE ALARM CKT)
BAT TO INTERFACE AND CONTROL CKT

NOTES:

1. EXCEPTION REPORT AND ALARM LAMP NEAR KEYBOARD PRINTER.

MAINTENANCE DATA TRANSMITTER

DWG SIZE	ISSUE
6S	6A

BELL LABORATORIES | SD-28111-01- | B1B

FS 3

DISTRIBUTE AND SCAN POINT ASSIGNMENTS

STATUS AND DATA SCANNER ASSIGNMENTS (SEE NOTES 1,3,4,6)

ROW	DISP	BIT NUMBER										
		9	8	7	6	5	4	3	2	1	0	
15	17	A		B				A				CONN CKT
				116	117	118	119					LEAD DESIG
14	16	A		B								CONN CKT
				108	109	110	111	112	113	114	115	LEAD DESIG
13	15	A		B								CONN CKT
				100	101	102	103	104	105	106	107	LEAD DESIG
12	14	A		B								CONN CKT
				92	93	94	95	96	97	98	99	LEAD DESIG
11	13	A		B								CONN CKT
				86	87	88	89	BWX2	BWX3	90	91	LEAD DESIG
10	12	A		B								CONN CKT
				78	79	80	81	82	83	84	85	LEAD DESIG
9	11	A		B								CONN CKT
				70	71	72	73	74	75	76	77	LEAD DESIG
8	10	A		B								CONN CKT
				62	63	64	65	66	67	68	69	LEAD DESIG
7	07	A		B								CONN CKT
				54	55	56	57	58	59	60	61	LEAD DESIG
6	06	A		B								CONN CKT
				46	47	48	49	50	51	52	53	LEAD DESIG
5	05	A		B								CONN CKT
				38	39	40	41	42	43	44	45	LEAD DESIG
4	04	A		B								CONN CKT
				30	31	32	33	34	35	36	37	LEAD DESIG
3	03	A		B								CONN CKT
				24	25	26	27	28	29	BWX0	BWX1	LEAD DESIG
2	02	C	B									CONN CKT
		MB	ROS	16	17	18	19	20	21	22	23	LEAD DESIG
1	01	D	B									CONN CKT
		SPL	TRC	08	09	10	11	12	13	14	15	LEAD DESIG
0	00	B										CONN CKT
		STR	STRA1	00	01	02	03	04	05	06	07	LEAD DESIG

ALARM AND CONTROL DISTRIBUTOR ASSIGNMENTS (SEE NOTES 1,2,5,6)

ROW	DISP	BIT NUMBER						
		5	4	3	2	1	0	
3	03	A						CONN CKT
								PAIR DESIG
2	02	B		C				CONN CKT
		STR	STRA	ARLK	CMN	CMJ	MB	PAIR DESIG
1	01	B					A	CONN CKT
		TRC	S5	S6	S7	S8		PAIR DESIG
0	00	A	B					CONN CKT
			S0	S1	S2	S3	S4	PAIR DESIG

NOTES:

1. CONNECTING CIRCUITS ARE AS FOLLOWS:
   (A) - UNASSIGNED SCAN AND DISTRIBUTE POINTS
   (B) - TROUBLE RECORDER CONTROL AND TEST CKT
   (C) - MAINTENANCE DATA TRANSMITTER CKT
   (D) - MASTER TEST FRAME CONNECTOR CKT
2. PAIR DESIG SIGNIFICANCE:
   CMJ - CENTRAL ORIGINATED MAJOR ALARM
   CMN - CENTRAL ORIGINATED MINOR ALARM
   MB - MAKE BUSY
   S0-8 - SCAN RELAYS
   STR - START (REGULAR)
   STRA - START (AUXILIARY)
   TRC - TROUBLE RECORD COMPLETE
3. SCAN POINT DESIG SIGNIFICANCE:
   MB - MAKE BUSY
   SPL - SPECIAL (EXPRESS CARD)
   STR - START LEAD (REGULAR)
   STRA - START LEAD (AUXILIAPY)
   TRC - TROUBLE RECORD COMPLETE
4. SCAN POINTS HAVING NUMERICAL DESIGNATIONS ONLY, CONNECT TO THE CORRESPONDING BW--- LEADS OF THE TROUBLE RECORDER CONTROL AND TEST CKT.
5. THE GROUND RETURN LEAD DESIGNATION HAS A SUFFIX G AS SHOWN IN THE CADS.
6. SCAN AND DISTRIBUTE POINTS ARE LOCATED IN CIRCUIT PACKS OF THE SCANNER DISTRIBUTOR UNIT AS SHOWN BELOW. BIT NUMBERS ARE ASSOCIATED WITH SCAN AND DISTRIBUTE DESIGNATIONS IN FS 3.

CIRCUIT PACK LOCATIONS															
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
BITS 0	BITS 1	BITS 2	BITS 3	BITS 4	BITS 5	BITS 6	BITS 7	BITS 8	BITS 9	BITS 0,1		BITS 2,3		BITS 4,5	
A1068 SCAN PACKS										A1074 DISTRIBUTOR PACKS					

E-7421 (10-71)

MAINTENANCE DATA
TRANSMITTER

BELL TELEPHONE LABORATORIES
INCORPORATED

DWG SIZE 6S

SD-28111-01-B2

ISSUE 4AR

PRINTED IN U.S.A.

APP FIG. 1

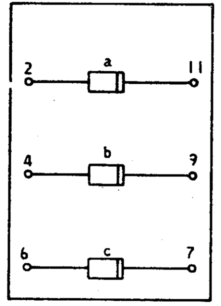
RELAY

DESIG	ACO		CMJ		CMN		LMJ		LMJA		MB		MB1		STR						DESIG
CODE	AJ15		AK22				AJ15		AJ15		AJ122		AJ15		AJ15						CODE
OPTION																					OPTION
	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	
12	EBM	1B/H4			EBM	1B/G4	EBM	1B/H1	EBM	1B/H1	EBM	1B/B2	EBM	1B/C1	EBM						12
11	EBM				EBM		EBM		EBM		EBM	1A/E3	EBM		EBM						11
10	EBM				EBM	1B/F6	EBM		EBM	1B/H4	EBM	1B/G1	EBM	1A/H3	EBM						10
9	EBM				EMB		EBM		EBM		EBM	1B/G2	EBM	1A/F3	EBM						9
8	EMB	1B/B1			EMB		EMB	1B/D1	EMB		EMB	1A/C3	EMB	1A/F3	EMB						8
7	EBM						EBM	1B/G1	EBM		EBM	1A/D3	EBM	1A/F3	EBM						7
6	EMB						EMB	1B/F2	EMB	1B/F4	EMB		EMB	1A/F3	EMB						6
5	EMB		EMB				EMB		EMB		EMB	1A/C3	EMB	1A/F3	EMB						5
4	EBM	1B/G6	EMB				EBM		EBM	1B/G6	EBM	1B/D3	EBM	1A/F3	EBM	1A/H3					4
3	EBM		EBM	1B/F6			EBM		EBM		EBM	1A/E3	EBM	1A/F3	EBM						3
2	EBM		EBM				EBM		EBM		EBM		EBM	1A/F3	EBM						2
1	EBM		EBM	1B/G4			EBM		EBM		EBM	1B/C2	EBM	1A/F3	EBM	1A/C3					1
COIL		1B/G3		1B/E1		1B/E1		1B/F3		1B/H2		1B/B2		1B/C2		1A/C4					COIL

RELAY

DESIG																					DESIG
CODE																					CODE
OPTION																					OPTION
	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	
12																					12
11																					11
10																					10
9																					9
8																					8
7																					7
6																					6
5																					5
4																					4
3																					3
2																					2
1																					1
COIL																					COIL

COMPONENT ASSEMBLY



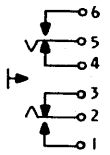
DESIG		CAO		
CODE		ED-94823-(),G428		
OPTION				
COMPONENT		DESIG	LOC	CODE
NETWORK	a	STR	1A/C4	185A
	b	STRA	1A/D4	
	c	TRC	1A/F3	

DIODE

OPT	DESIG	LOC	CODE
	MB1	1B/C1	426F

KEY

576A



ACO	AR
1B/G4	1B/H1

LAMP

OPT	DESIG	LOC	CODE
	ALM	1B/F3	2Y(RED)
	MB	1B/C1	2Y
	RAL	1B/G3	M1(AMBER)

NETWORK

OPT	DESIG	LOC	CODE
	CMJ	1B/E1	185A
	CMN	1B/E1	
	LMJ	1B/F3	
	MB	1B/B2	
	MB1	1B/C2	

RESISTOR

OPT	DESIG	LOC	CODE
	CAL	1B/F5	19EW
	LAL	1B/G5	18CN

ISSUE
6A

MAINTENANCE DATA
TRANSMITTER

SD-28111-01-C1

BELL TELEPHONE LABORATORIES
INCORPORATED

6S

PRINTED IN U.S.A.

CIRCUIT NOTES:

101.

DESIG	FUSE AMP	POTENTIAL	ONE PER
A	1 1/3	-48 TALK	CKT

BATTERY SYMBOL	VOLTAGE RANGE

102.

FEATURE OR OPTION		PROVIDE		
		APP FIG.	APP OR WRG	QUANTITY
MAINTENANCE DATA TRANSMITTER CIRCUIT		1		1 PER CKT
OFFICE ARRANGED FOR PROGRAM CONTROLLED DATA ACQUISITION	YES		V	
	NO		[✓ W]	
ALARM CONNECTION	CSACS ONLY		Z	
	ALARM SENDING ONLY		[✓ Y]	
	TASC		R,Y	
	NONE OF THE ABOVE		X	

103.

NETWORK VALUES		
NETWORK NO.	RESISTANCE IN OHMS	CAPACITANCE IN uF
1	470	0.11

104.

RECORD OF APP FIGURES,WIRING,AND APPARATUS CHANGES						
CHANGED ON ISS	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN	SEE NOTE	USE IN CIRCUIT		
				STD	A&M	MD
2B	V OR W	W	102, 107	V,W		
	S OR T	T	108	S		T
5B	R	X,Y OR Z	102, 110, 111	R,X, Y,Z		

CIRCUIT NOTES:

105. NOTE CANCELLED ISSUE 5B.

106. IN ADDITION TO SD-28111-01, A PROGRAMMABLE SCANNER DISTRIBUTOR (PSD), SD-94844-01, MUST BE PROVIDED WITH THE FOLLOWING APPARATUS AND OPTIONS.

QUAN	
1	APP FIG. 1; OPTION W; BASIC PSD WITH COMBINED SCANNER/DISTRIBUTOR
~~1~~	~~APP FIG.2; RANDOM ACCESS MEMORY, 1024 WORDS~~ (8 BITS & PTY) DESIGNATED RAM O AND PROVIDED IN EQUIPMENT LOCATION 02-24
	APP FIG. 3; OPTION Y; DATA CHANNELS WITH OPTIONS AS FOLLOWS: OPTION Q; 300 BAUD, DATA CHANNEL 0 (FOR PRIMARY DATA CHANNEL) OPTION R; 300 BAUD, DATA CHANNEL 1 (FOR SECONDARY DATA CHANNEL) OPTION S; 300 BAUD, DATA CHANNEL 2 (FOR KEYBOARD PRINTER CHANNEL)

THE PROGRAMMABLE CONTROLLER (PROCON) WITHIN THE PSD SHALL BE PROGRAMMED WITH PK-AA32.

107. WHEN OPTION V IS ADDED BY FIELD MODIFICATION, OPTION W MUST BE REMOVED.

108. OPTION S PROVIDES MULTIPLE AUTOMATIC PROGRAM REINITIALIZATIONS IN RESPONSE TO MDT-DETECTED TROUBLES. WHEN OPTION S IS ADDED BY FIELD MODIFICATION, OPTION T MUST BE REMOVED.

109. ON ISSUE 4AR, PROGRAM STORE PK-AA32 REPLACES PK-AA31 WHICH IS RATED "MFR DISC".

110. PRIOR TO ISSUE 5B, OPTIONS X,Y, AND Z WERE NON-RECORD OPTIONS.

111. OPTION R PROVIDES A MAJOR OFFICE ALARM IN ADDTION TO THE UNIQUE ALARM INDICATION WHEN THIS CIRCUIT IS CONNECTED TO AN INTERFACE AND CONTROL CIRCUIT FOR THE TASC SYSTEM.

EQUIPMENT NOTES:

201. THE RESISTANCE OF LEADS S0 TO S8 BETWEEN THE MDT AND THE SCANNING RELAYS OF THE MASTER TEST FRAME CONNECTOR MUST NOT EXCEED 10 OHMS.

202. THE CENTRAL OFFICE MOUNTED EQUIPMENT REQUIRED FOR AUTOMATIC TROUBLE ANALYSIS CONSISTS OF ONE J23252CR-( ) ATA - INTERFACE UNIT AND ONE J99379B-( ) COMBINED SCAN/DISTRIBUTE PSD. J99379B-( ) MUST BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:

QUAN	CODE	DESCRIPTION
1	J99379B,L1	COMMON SYSTEMS PROGRAMMABLE SCANNER DISTRIBUTOR UNIT WITH 160 SCAN AND 24 DISTRIBUTE POINTS.
1	J99379B,L2A	RANDOM ACCESS MEMORY, 1024 WORDS BY 8 BITS DESIGNATED RAM O AND PROVIDED IN EQUIPMENT LOCATION 02-24
1	J99379B,L3A	
1	J99379B,L3B	THREE EIA RS-232-C I/O PORTS (MUST BE ARRANGED FOR 300 BAUD OPERATION)
1	J99379B,L3C	
1	16-12 J1C082B,L19	PROGRAMMABLE CONTROLLER PROGRAMMED/PK-AA32
1	J99379B,L4	BRACKETS REQUIRED TO MOUNT PSD ON 23" RELAY RACK

203. SCAN/DISTRIBUTE ADDRESSING AS DEFINED BY NOTE 401 OF SD-94851-01 REQUIRES GROUND STRAPS ON TERMINALS N5 THROUGH N8.

204. THE -48V, TALK OR SIGNAL BATTERY REQUIRED BY THE PSD UNIT, J99379B, IS PROVIDED FROM A 5 AMP FUSE ON THE PRTD FRAME. SEE CAD 7.

ISSUE
6A

MAINTENANCE DATA
TRANSMITTER

BELL TELEPHONE LABORATORIES
INCORPORATED

DWG SIZE
6S

SD-28111-01-D1

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E-7421 (10-71)

INFORMATION NOTES:

301. UNLESS OTHERWISE SPECIFIED: RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, VALUES PRECEDED BY +(PLUS) OR -(MINUS) ARE IN VOLTS.

302. THE KEYBOARD PRINTER TERMINAL IS PROVIDED BY THE OPERATING COMPANY. THIS CONTINUOUS FEED, HARD-COPY UNIT IS REQUIRED TO HAVE OFF-LINE CAPABILITY AND COMPLY WITH UNDER WRITERS LABORATORY STANDARD 478. ADDITIONAL FEATURES AND CHARACTERISTICS REQUIRED ARE LISTED BELOW.

TRANSMISSION TYPE - SERIAL-BY-BIT, SERIAL-BY-CHARACTER

TRANSMISSION CODE - ASCII 96 CHARACTER SET (UPPER AND LOWER CASE) AND SPECIAL CHARACTERS BEL (OCTAL 07), CAN(OCTAL 30), CR (OCTAL 15), ESC(OCTAL 33) AND LF(OCTAL 12)

TRANSMISSION SPEED - 300 OR 1200 BAUD (300 BAUD WILL BE USED FOR INITIAL OPERATION)

TRANSMISSION MODE - FULL DUPLEX

CODE LEVEL AND UNIT CODE - 30 OR 120 CHAR/SEC 10 BITS PER CHARACTER (1 START, 7 INTELLIGENCE, 1 PARITY, 1 STOP BIT, EVEN PARITY REQUIRED)

COMMUNICATIONS INTERFACE - INTERFACE BETWEEN THE KEYBOARD PRINTER AND THE DATA LINE CONFORMS TO EIA STANDARD RS-232-C

PRINT CHARACTER SET - 96 CHARACTER ASCII

PRINT LINE LENGTH - MINIMUM 80 CHARACTERS

303. FULL DUPLEX DATA SERVICE SHALL BE PROVIDED BY THE OPERATING COMPANY. A DEDICATED (NON-SWITCHED) LINE IS REQUIRED FOR THE PRIMARY DATA CHANNEL. AN OPTIONAL SWITCHED LINE MAY BE PROVIDED FOR A SECONDARY (BACKUP) CHANNEL. THE INITIAL STANDARD TRANSMISSION RATE WILL BE 300 BAUD. DATA SET INTERFACES SHALL BE COMPATIBLE WITH THE SPECIFICATIONS OF EIA STANDARD RS-232-C

THE PRIMARY LINE DATA SET SHALL PROVIDE FOR TESTING FROM THE REMOTE END. EXCEPT WHERE LOCAL PRACTICES CONFLICT, IT IS SUGGESTED THIS SET BE ARRANGED FOR "ANSWER". BELL SYSTEM 108 TYPE DATA SETS ARE REPRESENTATIVE OF SETS WHICH MAY BE USED WITH THE PRIMARY CHANNEL.

THE OPTIONAL BACKUP LINE DATA SET SHALL BE EQUIPPED FOR "AUTO ANSWER". EXCEPT WHERE LOCAL PRACTICES CONFLICT, IT IS SUGGESTED THIS SET BE ARRANGED FOR "RECEIVE". BELL SYSTEM 103A3 DATA SETS ARE REPRESENTATIVE OF SETS WHICH MAY BE USED WITH THE BACKUP CHANNEL.

304. A NULL MODEM (CROSS CONNECT DEVICE) IS REQUIRED TO CONNECT THE KEYBOARD PRINTER AND THE MDT UNLESS DATA SETS ARE USED FOR THIS CONNECTION OR A NULL MODEM CABLE IS PROVIDED. THE NULL MODEM MUST TRANSPOSE THE EIA RS-232-C SIGNALING CIRCUITS BA (TRANSMITTED DATA) AND BB (RECEIVED DATA) AND PROVIDE STRAIGHT-THROUGH CONNECTIONS FOR CIRCUITS AA (PROTECTIVE GROUND) AND AB (SIGNAL GROUND). THE NULL MODEM MUST ALSO CONNECT THE RS-232-C SIGNALING CIRCUITS LISTED BELOW TO PROVIDE THE CONTROL CONDITIONS REQUIRED BY THE MDT.

CIRCUIT DESIGNATION	RS-232-C DEFINED CONDITION REQUIRED
CB (CLEAR TO SEND)	ON (POSITIVE)
CC (DATA SET READY)	ON (POSITIVE)
CF (RECEIVED LINE SIGNAL DETECTOR)	ON (POSITIVE)

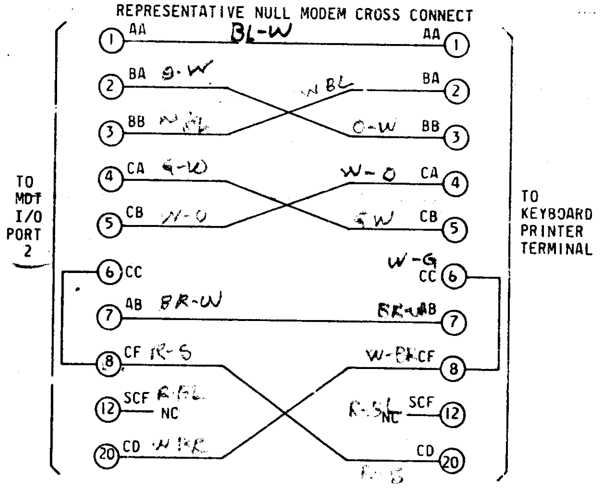
NULL MODEM CONNECTIONS MUST ALSO BE PROVIDED AS REQUIRED FOR THE TYPE OF KEYBOARD PRINTER USED. THE MDT PROVIDES THE RS-232-C CONDITIONS LISTED BELOW FOR CONTROL OF THE KEYBOARD PRINTER.

CIRCUIT DESIGNATION	RS-232-C DEFINED CONDITION
CA (REQUEST TO SEND)	ON (POSITIVE)
CD (DATA TERMINAL READY)	ON (POSITIVE)

A NULL MODEM CROSS CONNECT SUITABLE FOR USE WITH A TYPICAL KEYBOARD PRINTER SUCH AS THE TELETYPE CORPORATION MODEL 43KSR TELEPRINTER CODE 4320.AAC IS SHOWN BELOW. SEE NOTE 309 FOR SPECIFICATIONS AND ALTERNATIVE VENDOR UNITS.

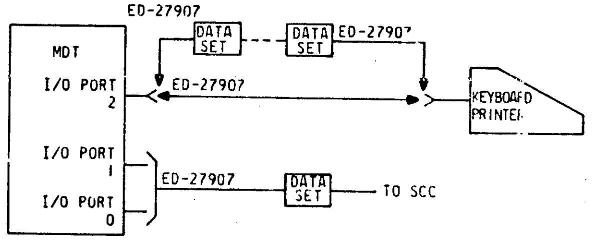
EIA RS-232-C COMPATIBLE CONNECTORS CAN BE WIRED FOR THIS PURPOSE OR A SUITABLE NULL MODEM CABLE AS DEFINED BY ED-27907 CAN BE USED AS SHOWN IN NOTE 305.

REPRESENTATIVE NULL MODEM CROSS CONNECT



THESE SIGNALING CIRCUITS CONNECTIONS CORRESPOND TO NULL MODEM CABLE ED-27907 GROUP 1.

305. MDT CABLING ARRANGEMENTS. LENGTH OF CABLE MUST BE SPECIFIED BY TELEPHONE COMPANY. MAXIMUM CABLE LENGTH IS 200 FEET.



306. OPTION V, SHOWN IN THE PROGRAMMABLE SCANNER DISTRIBUTOR CIRCUIT SD-94844-01 SHALL NOT BE PROVIDED WHEN THAT CIRCUIT IS CONNECTED TO THE MAINTENANCE DATA TRANSMITTER CIRCUIT.

307. A -48V TEST PICK SHALL NOT BE USED FOR TESTS OF THE PROGRAMMABLE SCANNER DISTRIBUTOR CIRCUIT. TESTING SHALL BE DONE BY MEANS OF VOLTAGE MEASUREMENT ONLY.

308. THE MAINTENANCE DATA TRANSMITTER CIRCUIT IS NOT COMPATIBLE WITH NO. 5 CROSSBAR OFFICES EQUIPPED WITH THE NO. 5 ELECTRONIC TRANSLATOR SYSTEM.

309. THE TELETYPE CORPORATION MODEL 43KSR TELEPRINTER CODE 4320.AAC IS A TYPICAL KEYBOARD PRINTER UNIT FOR USE WITH THE MDT. THIS UNIT SHOULD BE ORDERED WITH THE OPTIONAL TELETYPE CORPORATION MODEL 40 PEDESTAL (USOC 4TMAA) AND THE MODEL 40 FORM ACCUMULATOR SHELF (USOC 4TN00).

FEATURES SELECTED BY INTERNAL SWITCHES ARE SPECIFIED AS INDICATED BELOW:

OPTION SPECIFICATION	INTERNAL SWITCH SETTINGS*	FUNCTION
431A	SPD4 7 & 8 "ON"	NARROW NUMBERIC 0 AND WIDE ALPHA O
432A	SPD4 5 & 6 "ON"	132 CHARACTER LINE LENGTH
433A	SPD4 4 "OFF"	DISCONNECT ON RECEIPT OF EOT CHARACTER
434A	SPD4 3 "OFF"	EVEN PARITY BIT SET ON SEND
435A	SPD4 1 "OFF"	AUTO CR-LF PERFORMED AT END OF LINE ON RECEIVE

*THE POSITIONS OF UNSPECIFIED FEATURE SWITCHES WILL NOT AFFECT THE DESIRED FEATURES.

SOME ALTERNATIVE KEYBOARD PRINTERS WHICH MAY BE USED WITH THE MDT INCLUDE THE TEXAS INSTRUMENT CORPORATION "SILENT 700", THE GENERAL ELECTRIC CORPORATION "TERMINET 1200", THE DIGITAL EQUIPMENT CORPORATION "LA 36", AND THE COMPUTER TRANSCEIVER "EXECUPORT 300". THE NULL MODEM CROSS CONNECT SHOWN IN NOTE 304 IS SUITABLE FOR THESE UNITS. APPROPRIATE NULL MODEM CABLES ARE DEFINED BY DRAWING ED-27907.

CROSS CONNECTING INFORMATION (CONDITION)

PART	CONDITION	CONNECT		CONDITION
		TERM	TO TERM	
1	SCAN POINT FOR SPECIAL EXPRESS CARDS WHERE REQUIRED	SPL		SINGLE GROUND SOURCE TO BE DETECTED

ISSUE 6A

MAINTENANCE DATA
TRANSMITTER

SD-28111-01-D2

BELL TELEPHONE LABORATORIES
INCORPORATED

6S

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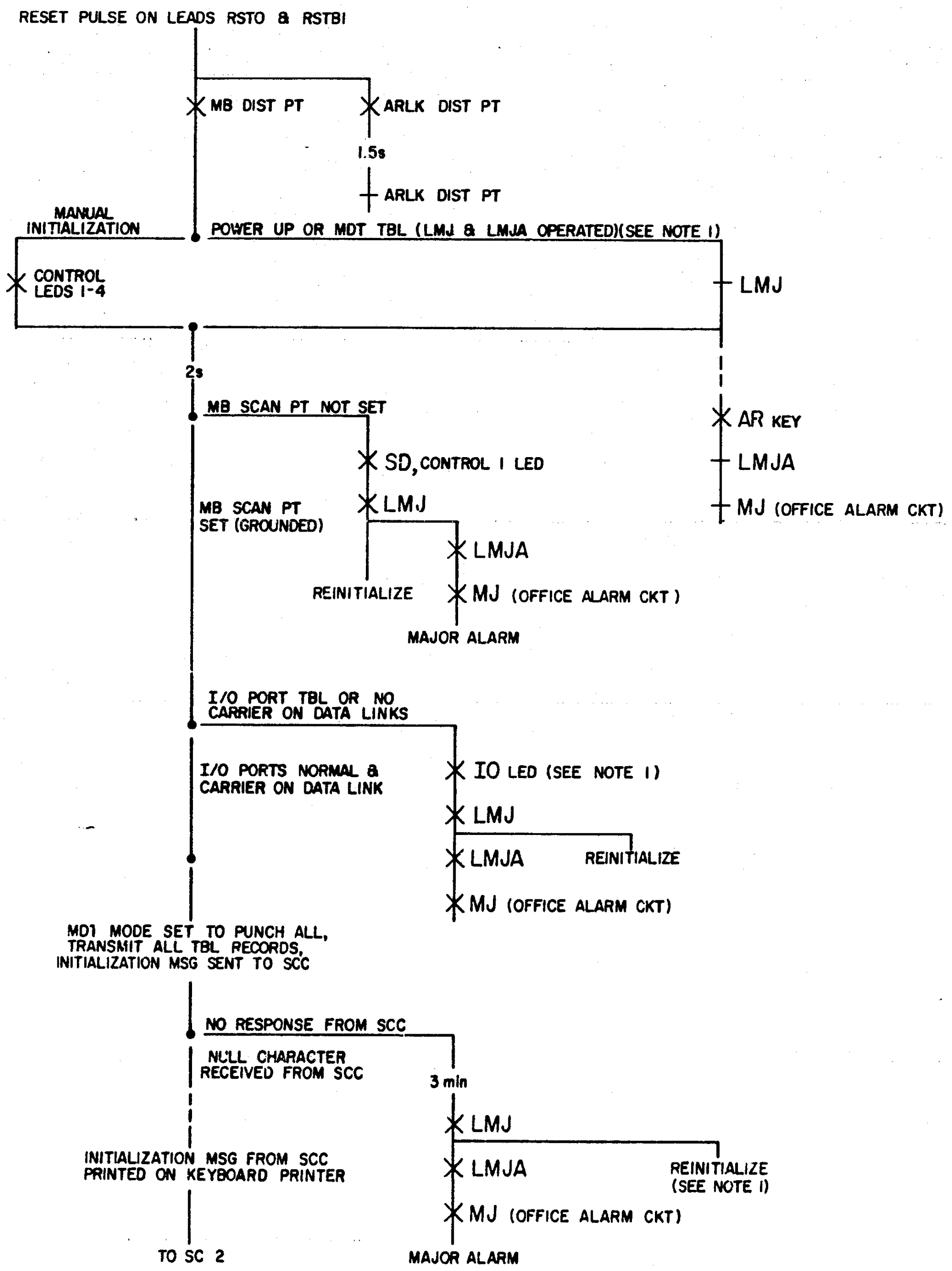
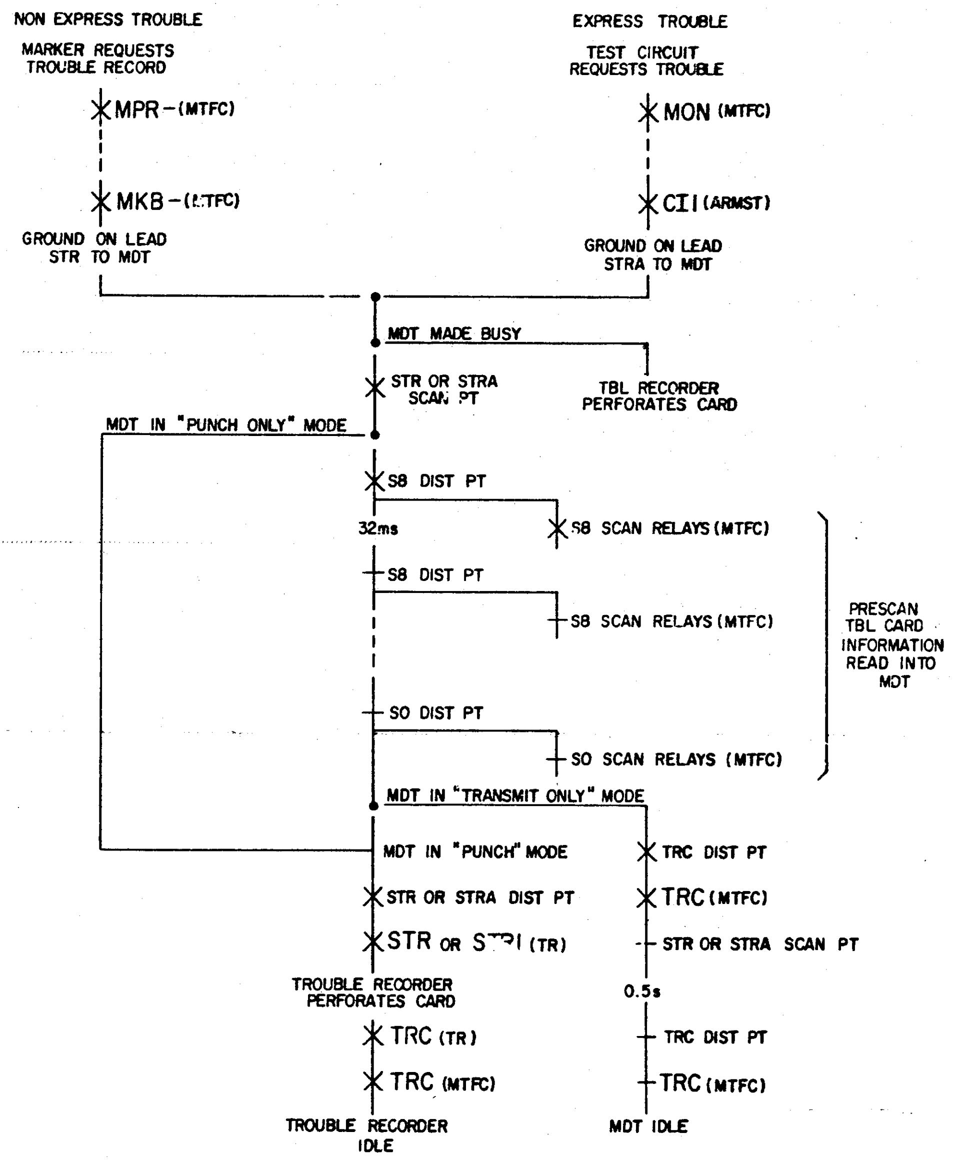
SC 1

INITIALIZATION


RESET PULSE ON LEADS RSTO & RSTBI
MB DIST PT
ARLK DIST PT
1.5s
ARLK DIST PT
MANUAL INITIALIZATION
POWER UP OR MDT TBL (LMJ & LMJA OPERATED)(SEE NOTE I)
CONTROL LEDS I-4
LMJ
2s
AR KEY
MB SCAN PT NOT SET
LMJA
SD, CONTROL I LED
MJ (OFFICE ALARM CKT)
MB SCAN PT SET (GROUNDED)
LMJ
LMJA
REINITIALIZE
MJ (OFFICE ALARM CKT)
MAJOR ALARM
I/O PORT TBL OR NO CARRIER ON DATA LINKS
I/O PORTS NORMAL & CARRIER ON DATA LINK
IO LED (SEE NOTE I)
LMJ
LMJA
REINITIALIZE
MJ (OFFICE ALARM CKT)
MDT MODE SET TO PUNCH ALL, TRANSMIT ALL TBL RECORDS, INITIALIZATION MSG SENT TO SCC
NO RESPONSE FROM SCC
NULL CHARACTER RECEIVED FROM SCC
3 min
LMJ
LMJA
REINITIALIZE (SEE NOTE I)
INITIALIZATION MSG FROM SCC PRINTED ON KEYBOARD PRINTER
MJ (OFFICE ALARM CKT)
TO SC 2
MAJOR ALARM

SC 2

TYFICAL MDT USAGE
(SEE NOTE 2)



NOTES:
1. SEE CD FOR SD 28111-01 FOR MDT TBL DISPLAYS.
2. TROUBLE CONDITIONS DETECTED BY THE MDT WILL RESULT IN EITHER A KEYBOARD PRINTOUT EXPLAINING THE CONDITION OR THE MDT WILL OPERATE THE (MB) RELAY (DEFAULT TO CARDS).

MAINTENANCE DATA TRANSMITTER	DWG SIZE 6S	ISSUE 6A
BELL LABORATORIES	SD-28111-01-	E1

BRUNING 44-131 28142

CIRCUIT REQUIREMENTS

APPARATUS					MECH REQT			CIRCUIT PREPARATION			TEST SET PREP	SEE TEST NOTE	DIRECT CURRENT FLOW REQT					REMARKS
DESIG	CODE	OPT	FIG.		BSP FIG.	CONT PRES	ARM. TRVL	BLOCK OR INSULATE	TEST CLIP DATA CONN BAT.	TEST CLIP DATA CONN GRD			TEST WDG	TEST FOR	AFTER SOAK mA	TEST mA	READJ mA	
ACO	AJ15		1		249					U(ACO)	GRD			0		43	40.5	
CMJ	1/2AK22		1		216			3(CMJ)		1L(CMJ)	GRD			0		29	26	MOUNTED WITH CMN
CMN	1/2AK22		1		216			10(CMN)		1U(CMN)	GRD			0		29	26	MOUNTED WITH CMJ
LMJ	AJ15		1		249			6(LMJ)		U(LMJ)	GRD			0		45	40.5	
LMJA	AJ15		1		249			4,12(LMJA)		U(LMJA)	GRD			0		45	40.5	
MB	AJ122		1		249			12(MB)		1U(MB)	GRD		P	C		32.5	29.5	
										2U(MB)	GRD		S	0		34.5	31	
MB1	AJ15		1		249					U(MB1)	GRD			0		43	40.5	
STR	AJ15		1		249					U(STR)	GRD			0		43	40.5	

CIRCUIT REQUIREMENTS

APPARATUS					MECH REQT			CIRCUIT PREPARATION			TEST SET PREP	SEE TEST NOTE	DIRECT CURRENT FLOW REQT					REMARKS
DESIG	CODE	OPT	FIG.		BSP FIG.	CONT PRES	ARM. TRVL	BLOCK OR INSULATE	TEST CLIP DATA CONN BAT.	TEST CLIP DATA CONN GRD			TEST WDG	TEST FOR	AFTER SOAK mA	TEST mA	READJ mA	

ISSUE
3A

MAINTENANCE DATA
TRANSMITTER

BELL TELEPHONE LABORATORIES
INCORPORATED

DWG SIZE 6S

SD-28111-01-F1

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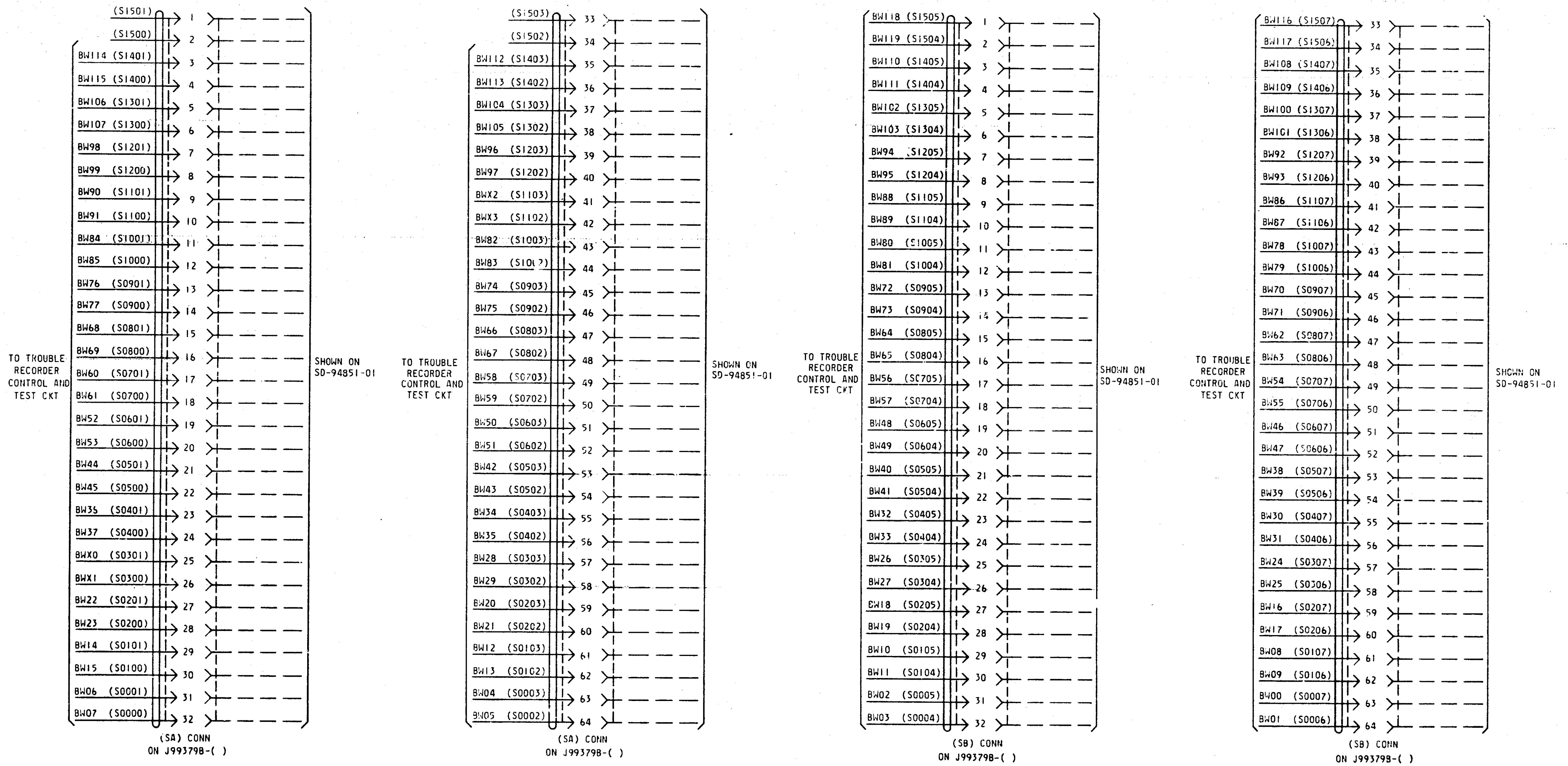
CBL-230(2-74)

CAD 1

(SEE NOTE 1)



NOTES:

1. ALL CABLES FROM SA AND SB CONNECTORS ARE TO BE 26 AWG.

ISSUE 1

MAINTENANCE DATA TRANSMITTER

SD-28111-01-G1

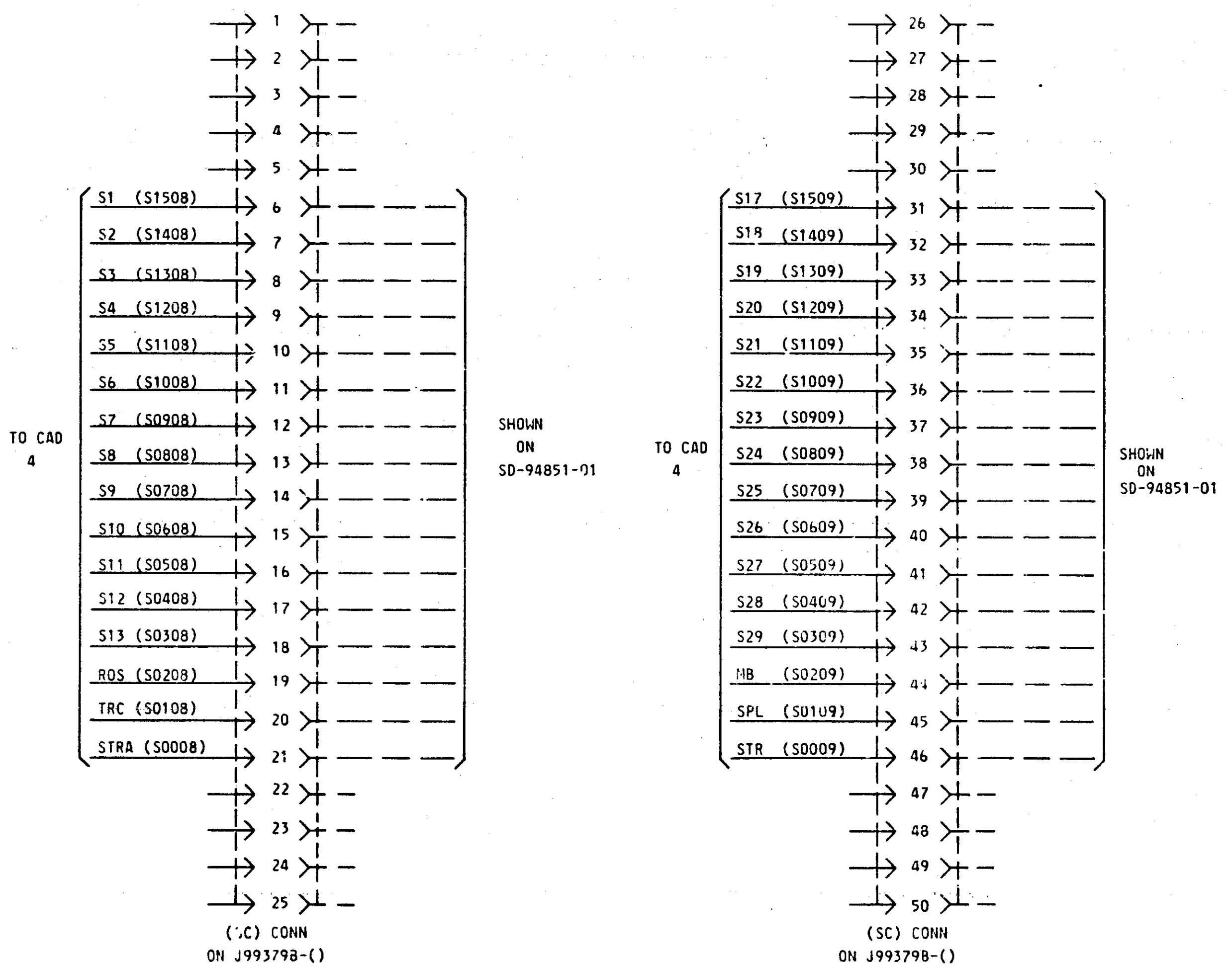
BELL TELEPHONE LABORATORIES INCORPORATED

6S

PRINTED IN U.S.A.

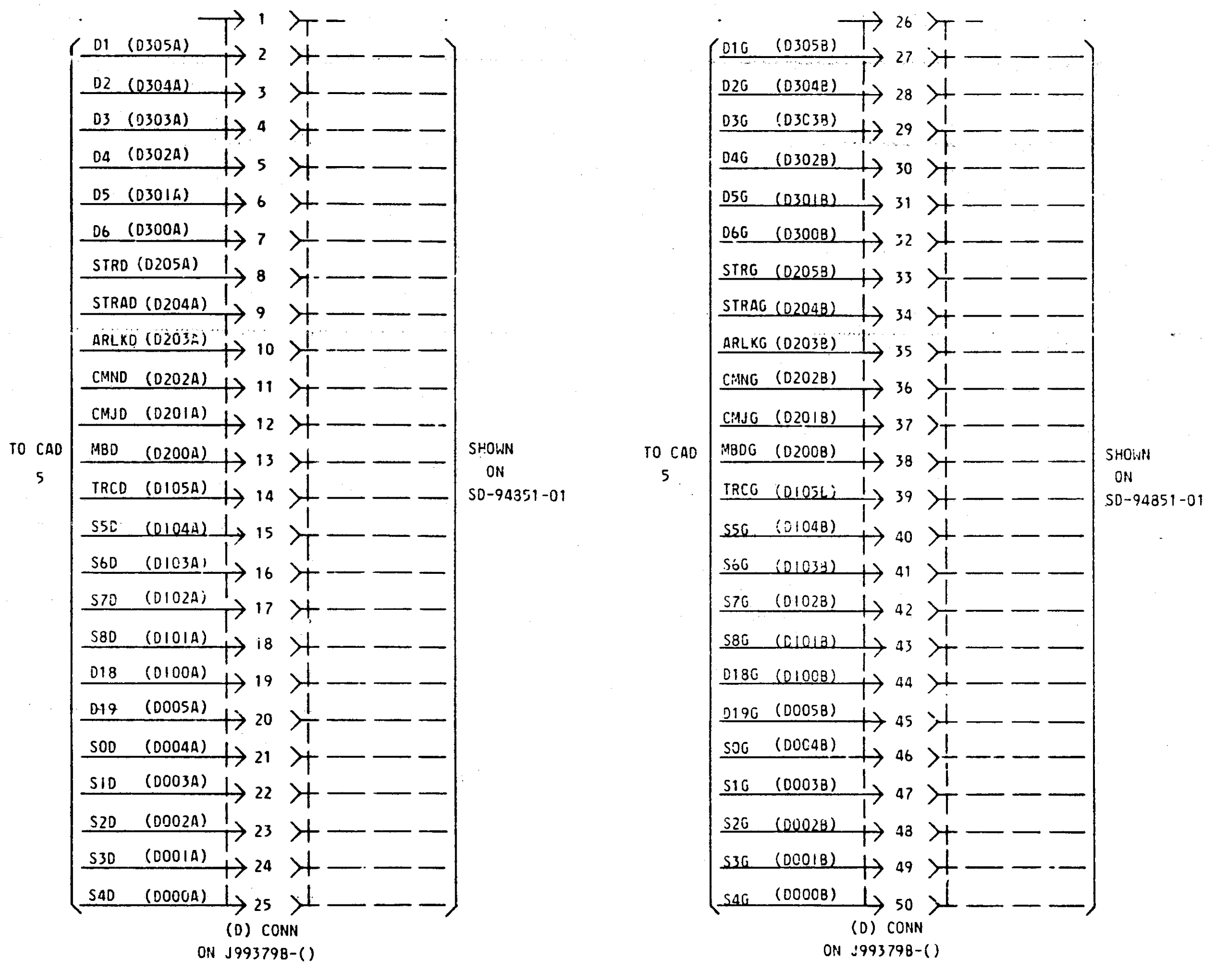
CAD 2

(SEE NOTE 1)



CAD 3

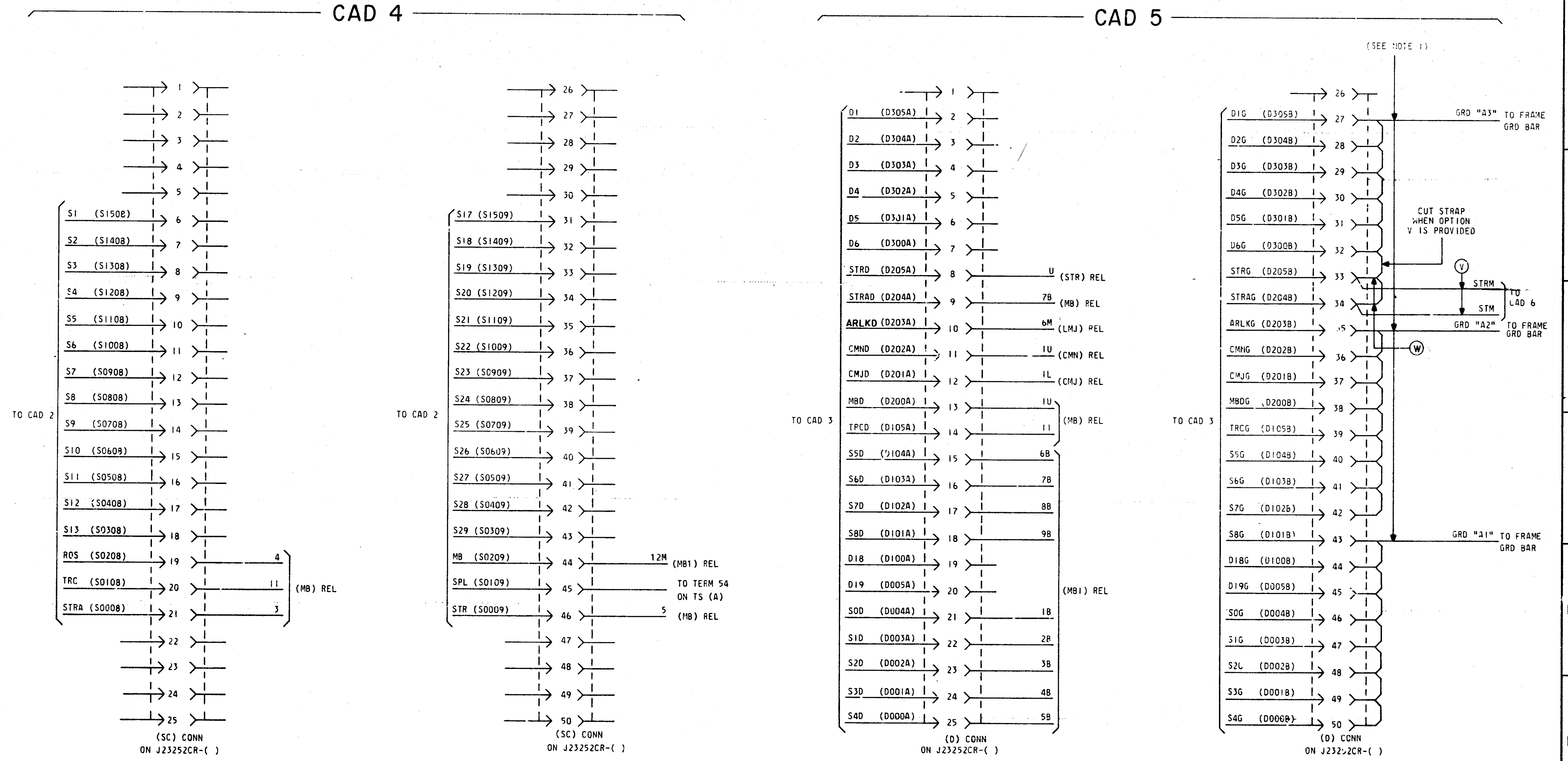
(SEE NOTES 1,2)



NOTES:

1. ALL CABLES FROM SC AND D CONNECTORS ARE TO BE 26 AWG.
2. DISTRIBUTE LEADS AND ASSOCIATED GROUND LEADS TO BE PAIRED, THAT IS D1 AND D1G TO BE PAIRED ETC.

ISSUE	2B
MAINTENANCE DATA TRANSMITTER	SD-28111-01-G2
BELL TELEPHONE LABORATORIES INCORPORATED	6S
	PRINTED IN U.S.A.



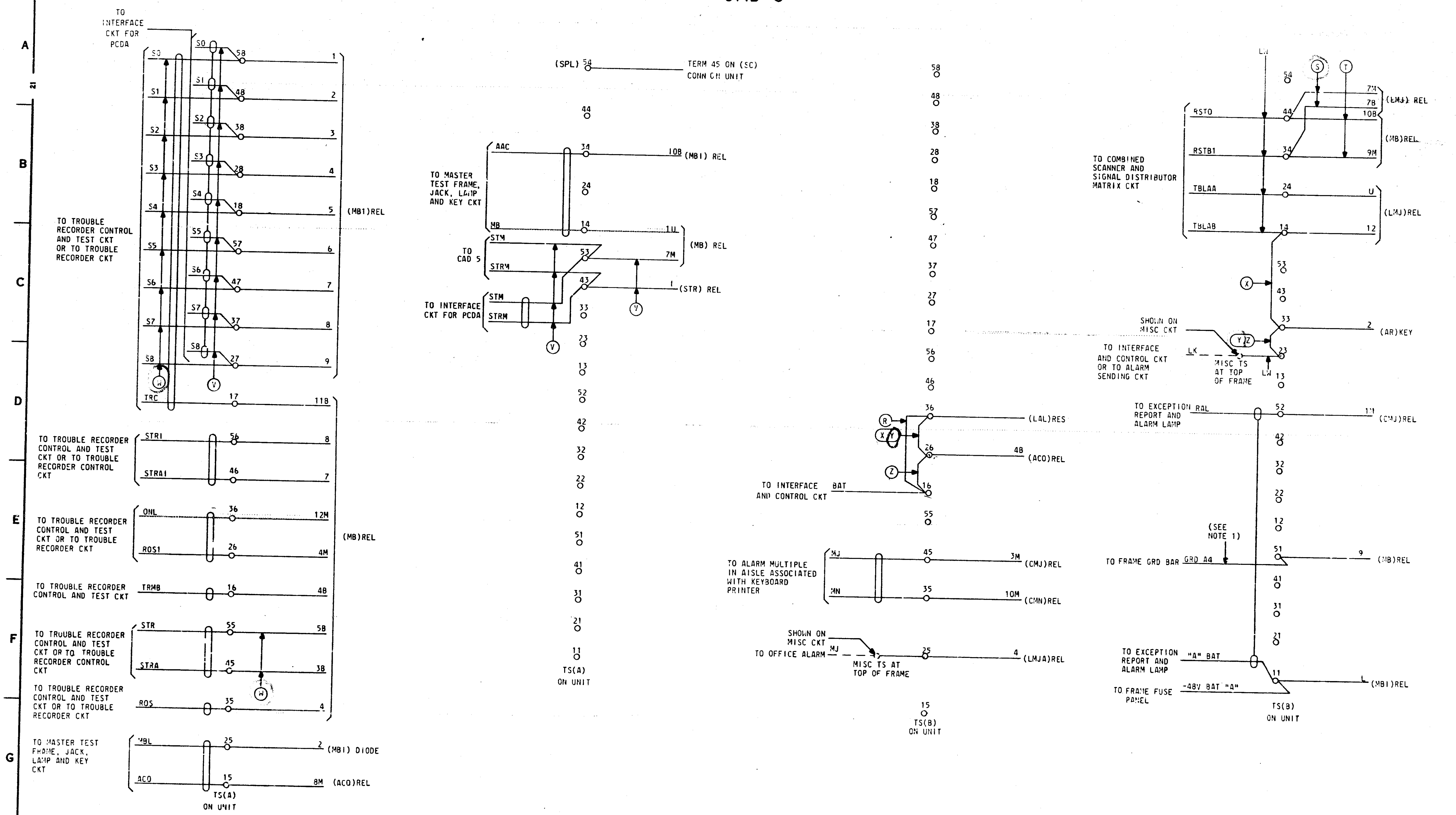
NOTES:

1. FOR THE FOUR "A" GRD LEADS USE TWO ADJACENT TERMINALS ON GRD BAR.

MAINTENANCE DATA TRANSMITTER	SD-28111-01-G3
BELL TELEPHONE LABORATORIES INCORPORATED	6S

ISSUE 2B

CAD 6



TO INTERFACE CKT FOR PCDA
S0 S1 S2 S3 S4 S5 S6 S7 S8
58 48 38 28 18 57 47 37 27
1 2 3 4 5 6 7 8 9
(MB1)REL
TO TROUBLE RECORDER CONTROL AND TEST CKT OR TO TROUBLE RECORDER CKT
TRC 17 11B
TO TROUBLE RECORDER CONTROL AND TEST CKT OR TO TROUBLE RECORDER CONTROL CKT
STR1 56 8
STRA1 46 7
TO TROUBLE RECORDER CONTROL AND TEST CKT OR TO TROUBLE RECORDER CKT
ONL 36 12M
ROS1 26 4M
(MB)REL
TO TROUBLE RECORDER CONTROL AND TEST CKT
TRMB 16 4B
TO TROUBLE RECORDER CONTROL AND TEST CKT OR TO TROUBLE RECORDER CONTROL CKT
STR 55 5B
STRA 45 3B
TO TROUBLE RECORDER CONTROL AND TEST CKT OR TO TROUBLE RECORDER CKT
ROS 35 4
TO MASTER TEST FRAME, JACK, LAMP AND KEY CKT
MBL 25 2 (MB1) DIODE
ACO 15 8M (ACO)REL
TS(A) ON UNIT
(SPL) 54 TERM 45 ON (SC) CONN CH UNIT
44
TO MASTER TEST FRAME, JACK, LAMP AND KEY CKT
AAC 34 10B (MB1) REL
24
MB 14 1U
TO CAD 5
STM 53 7M (MB) REL
STRM 43 1 (STR) REL
TO INTERFACE CKT FOR PCDA
STM STRM
33 23 13 52 42 32 22 12 51 41 31 21 11
TS(A) ON UNIT
58 48 38 28 18 57 47 37 27 17 56 46
TO INTERFACE AND CONTROL CKT BAT
36 (LAL)RES
26 4B (ACO)REL
16
55
TO ALARM MULTIPLE IN AISLE ASSOCIATED WITH KEYBOARD PRINTER
MJ 45 3M (CMJ)REL
MN 35 10M (CMN)REL
SHOWN ON MISC CKT
TO OFFICE ALARM MJ 25 4 (LMJA)REL
MISC TS AT TOP OF FRAME
15 TS(B) ON UNIT
LW
54
7M 7B (LMJ) REL
RST0 44 10B
(MB)REL
TO COMBINED SCANNER AND SIGNAL DISTRIBUTOR MATRIX CKT
RSTB1 34 9M
TBLAA 24 U
(LMJ)REL
TBLAB 14 12
53 43
33 2 (AR)KEY
SHOWN ON MISC CKT
TO INTERFACE AND CONTROL CKT OR TO ALARM SENDING CKT
LK 23
MISC TS AT TOP OF FRAME
LW 13
TO EXCEPTION REPORT AND ALARM LAMP RAL 52 1M (CMJ)REL
42 32 22 12
(SEE NOTE 1)
TO FRAME GRD BAR GRD A4 51 9 (MB)REL
41 31 21
TO EXCEPTION REPORT AND ALARM LAMP "A" BAT
TO FRAME FUSE PANEL -48V BAT "A" 11 L (MB1)REL
TS(B) ON UNIT

NOTES:

1. FOR THE FOUR "A" GRD LEADS USE TWO ADJACENT TERMINALS ON GRD BAR.

ISSUE 6A

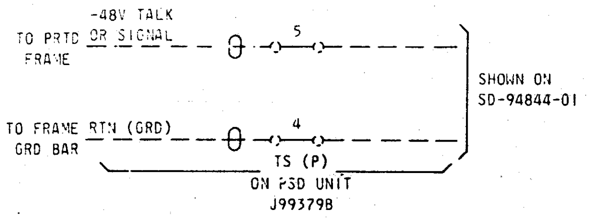
MAINTENANCE DATA
TRANSMITTER

SD-28111-01-G4

BELL TELEPHONE LABORATORIES
INCORPORATED

6S

CAD 7

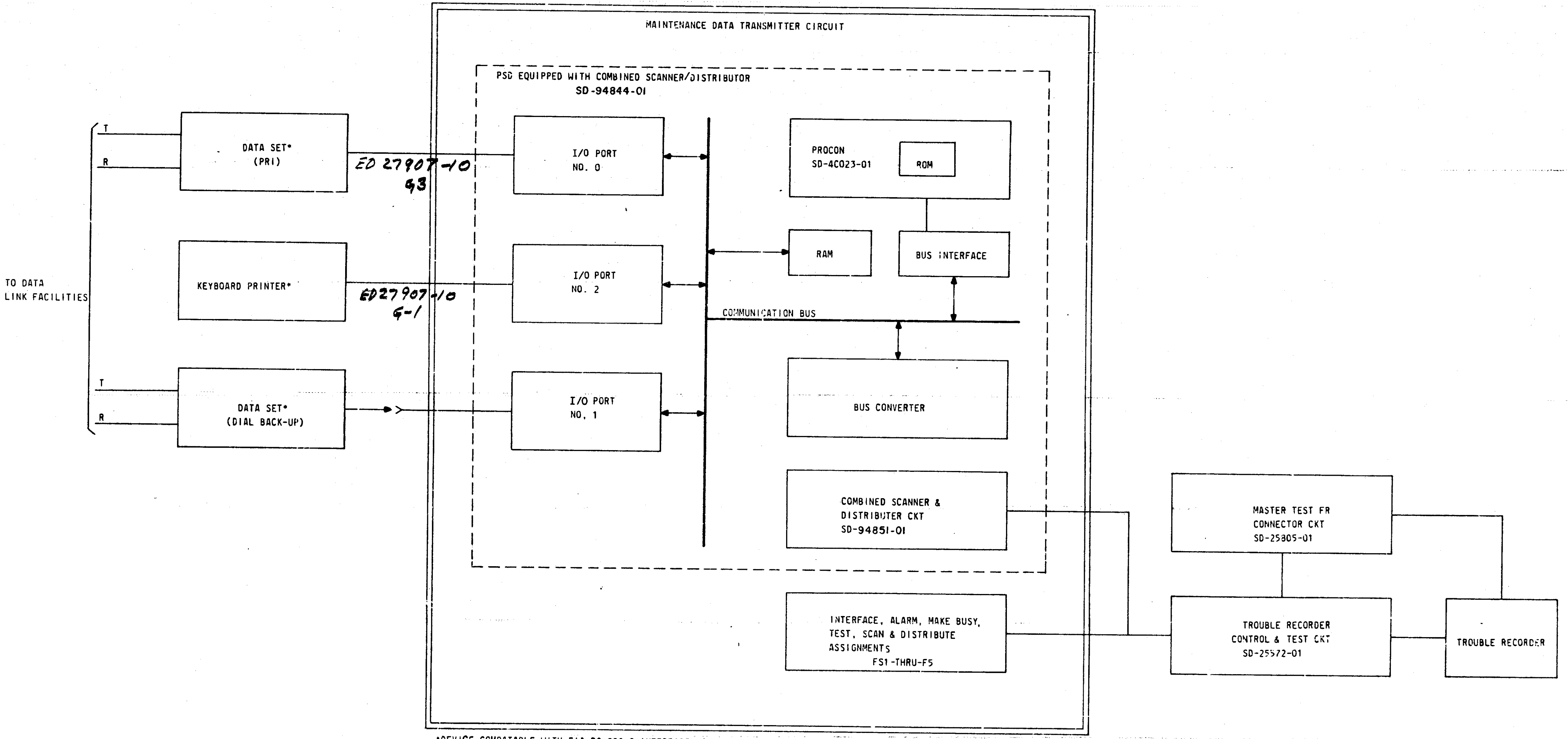


MAINTENANCE DATA TRANSMITTER		DWG SIZE 6S	ISSUE 4AR
BELL LABORATORIES	SD-28111-01-		G5

E-7481 (4-73)
PRINTED IN U.S.A.

BD 1

BLOCK DIAGRAM



*DEVICE COMPATABLE WITH EIA RS-232-C INTERFACE. (SEE NOTES 302,303,304 & 309).

ISSUE
6A

MAINTENANCE DATA
TRANSMITTER.

SD-28111-01-H1

BELL TELEPHONE LABORATORIES
INCORPORATED

6S

DESCRIPTION — 15 3/4 —

E1 - THIS CHANGE IS MADE TO ADD TERMINATION OF +130V CABLE FROM PRTD CKT TO CDT CKT.

W.E. MFRG DRAWINGS SHOW A TERMINATION FOR THE +130V CABLE ON PUNCHING 16 OF THE MISC. T.S., HOWEVER, IT IS NOT KNOWN IF THE WIRING USED IS 20 AWG. THEREFORE ALL CURRENT INSTALLATIONS WILL HAVE TO BE VERIFIED.

10 5/8

APPARATUS CHANGES

NONE

CIRCUIT/EQUIPMENT

TITLE CALL DATA TRANSMITTER APPLICATION CIRCUIT

SHEET 1 OF 2

SYSTEM #5 X3

ISSUE 6D

CODE OR DOCUMENT IDENTIFICATION SD-28130-01

☑ CIRCUIT
☐ EQUIPMENT

CHARGE CASE 012209-0360

WE CONTROL (PECC) CB

EQUIPMENT CHANGE CLASS ______

AT&T RATING ______

ASSOC CKT DWG ______

ISS ______ DATE ______

PROBABLE DEMAND

REPAIRED PRODUCT BSRS AFFECTED? ☐ YES ☐ NO

APPLICABLE BSPs

J SPEC AFFECTED YES ☐ NO ☐

PERFORMANCE REQ

MAINTENANCE

CIRCUIT SCHEDULED FOR DWG ISS 8A DATE ______

ITEMS E1

PROJECT 5-400

AT&T RATING STD

☐ FIELD REQUEST ☐ ENGR COMPLAINT
☐ BTL-NOT ON PROJECT ☑ WE REQUEST

SERVICE AFFECTED? ☐ YES ☑ NO

CUSTOMER PREMISES EQUIPMENT AFFECTED? ☐ YES ☐ NO

EQUIPMENT CODES

J22482-A

COORD CIRCUITS:

NONE

REASON FOR CHANGE AND DESCRIPTION

TO MEET DESIGN INTENT

DPC

RECORDED
OCT 08 1981
PMIRS

CHORFCB

RECEIVED
JAN 21
DEPT. 849280

SEP 29 1981

SEP 29 1981

ATTACHMENTS

SHEET G9

ADDITIONAL DISTRIBUTION

J. GRAHAM WE CO 1
J F RETTIG - BTL 1

REQ L LAB

BEFORE CKT ISS ☐

DEFERRED ☐

NOT REQ ☒

REFERENCES

(TO BE COMPLETED BY WE AND RETURNED TO BTL ENGR RECORDS

AT LOC. ______ DEPT. ______)

PRINCIPAL WE DWG ISSUE

APPROVALS CKT DEPT 55213 EQPT DEPT 55213 PROG DEPT — BTL CONTROL LOCATION CB

— CKT ENGR ______ DATE ______ EQPT ENGR E.J. SANTAMARIA DATE 9-22-81

— CKT SUPV ______ DATE ______ EQPT SUPV O. H. Smith DATE 9-22-81

CKT ENGR T.A. Schmitz DATE 9/21/81 PROG ENGR ______ DATE ______

CKT SUPV R.W. Kahn DATE 9/23/81 PROG SUPV ______ DATE ______

CLASS A, AC, AR CHANGE – COST AND APPROVAL

UNDER $100,000 ☒ ~~APPROVED BY ABOVE SUPERVISION~~

$ 10,000 ESTIMATED COST TO NEAREST $100,000

D. A. James DIRECTOR ($100,000 TO $1,000,000) EXEC DIRECTOR OVER $1,000,000

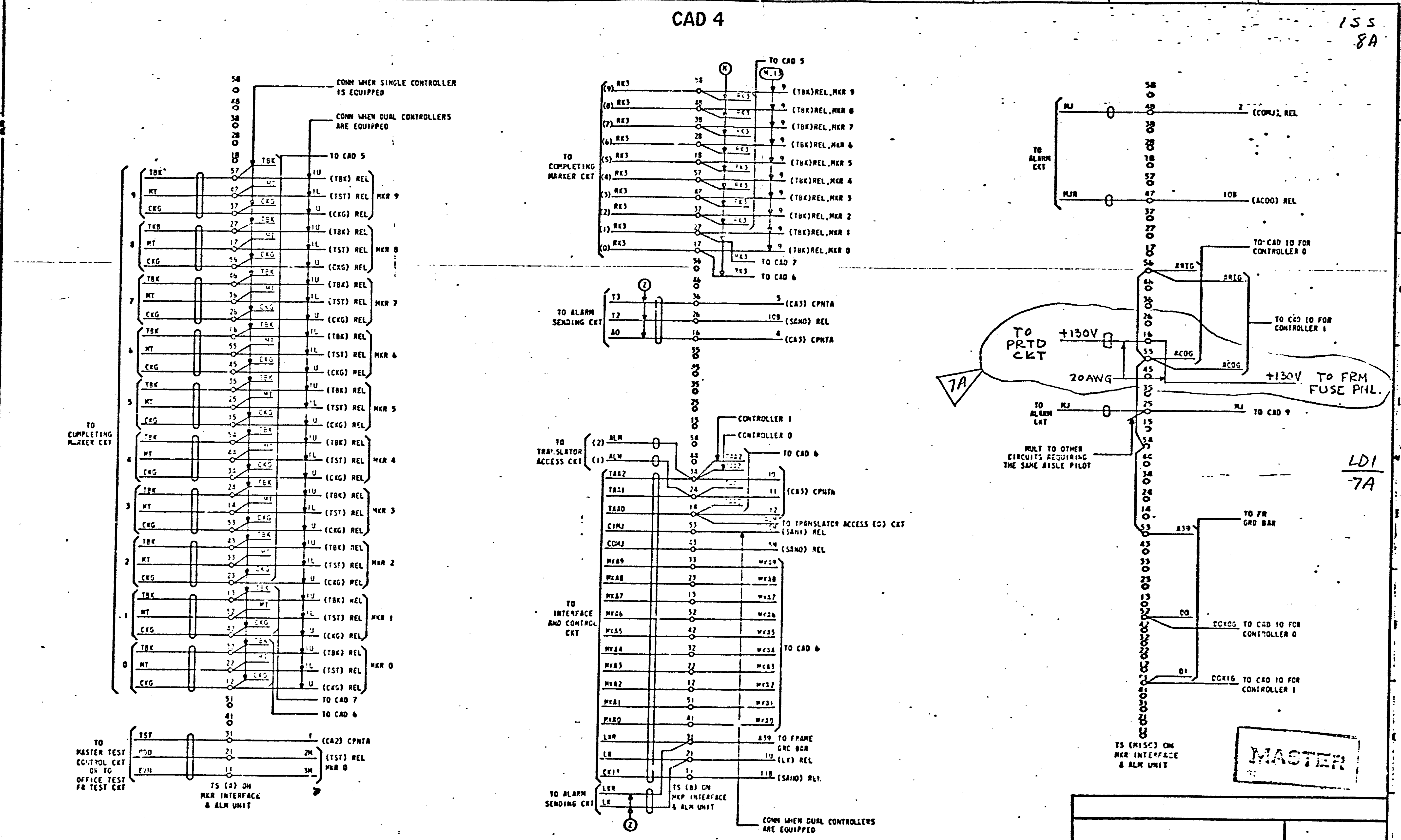
SIGNED ______ DATE ______

WITNESSED AND UNDERSTOOD BY ______ DATE ______

WE ENGR ______ LOC ______ TEL ______ DATE ______

102K(186)

BELL TELEPHONE LABORATORIES, INCORPORATED



CALL DATA TRANSMITTER APPLICATION

DWG SIZE	ISSUE
6S	7AC

BELL LABORATORIES | SD-23130-01- | G9